

LHCONE: NORDUnet View

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LHCONE Workshop
Amsterdam, 1-2 December 2011

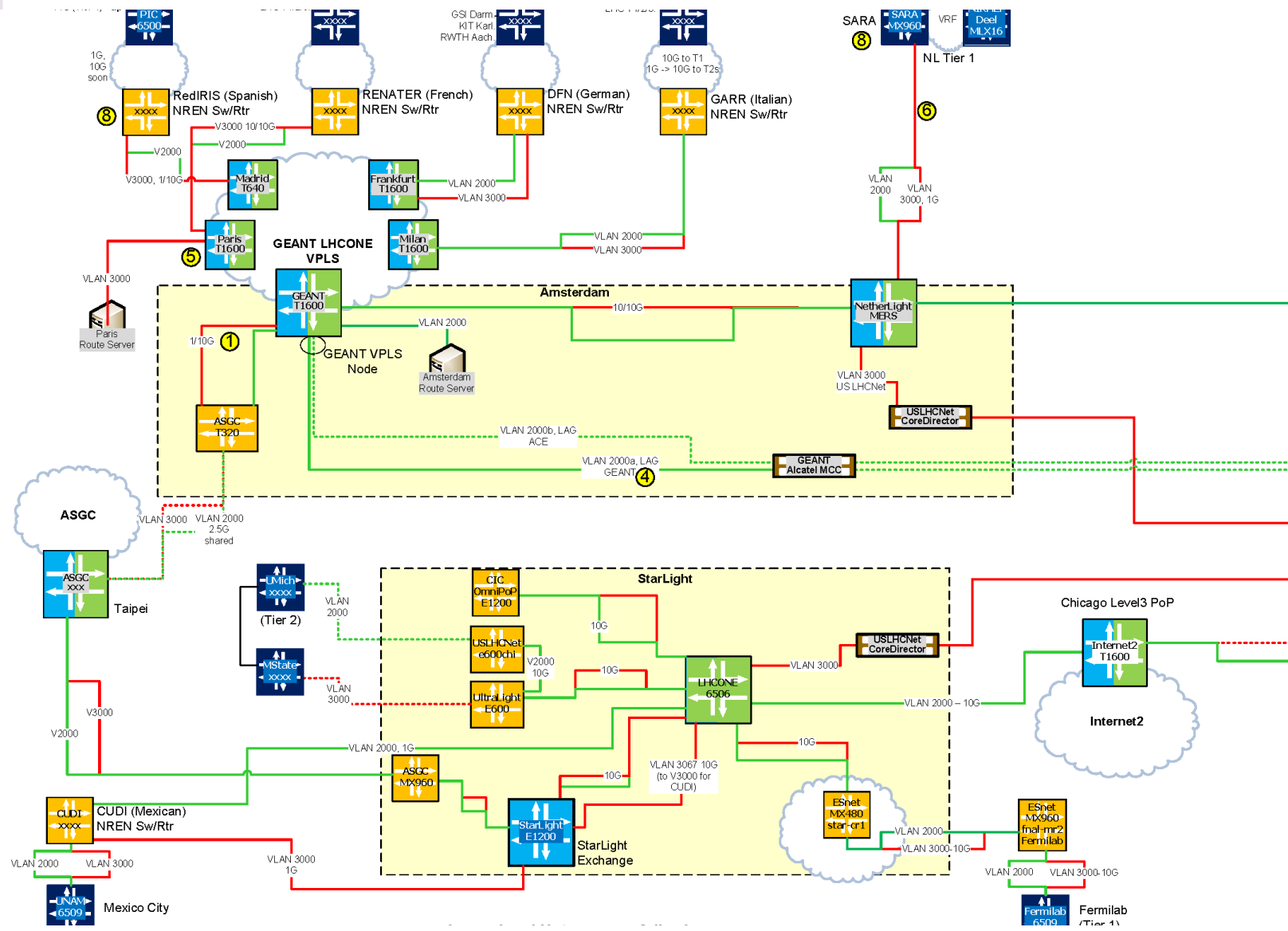


- LHCONE should
 - Interconnect T1/T2/T3
 - Avoid saturating the general-purpose R&E IP backbone
 - Give users better connectivity

NORDUnet

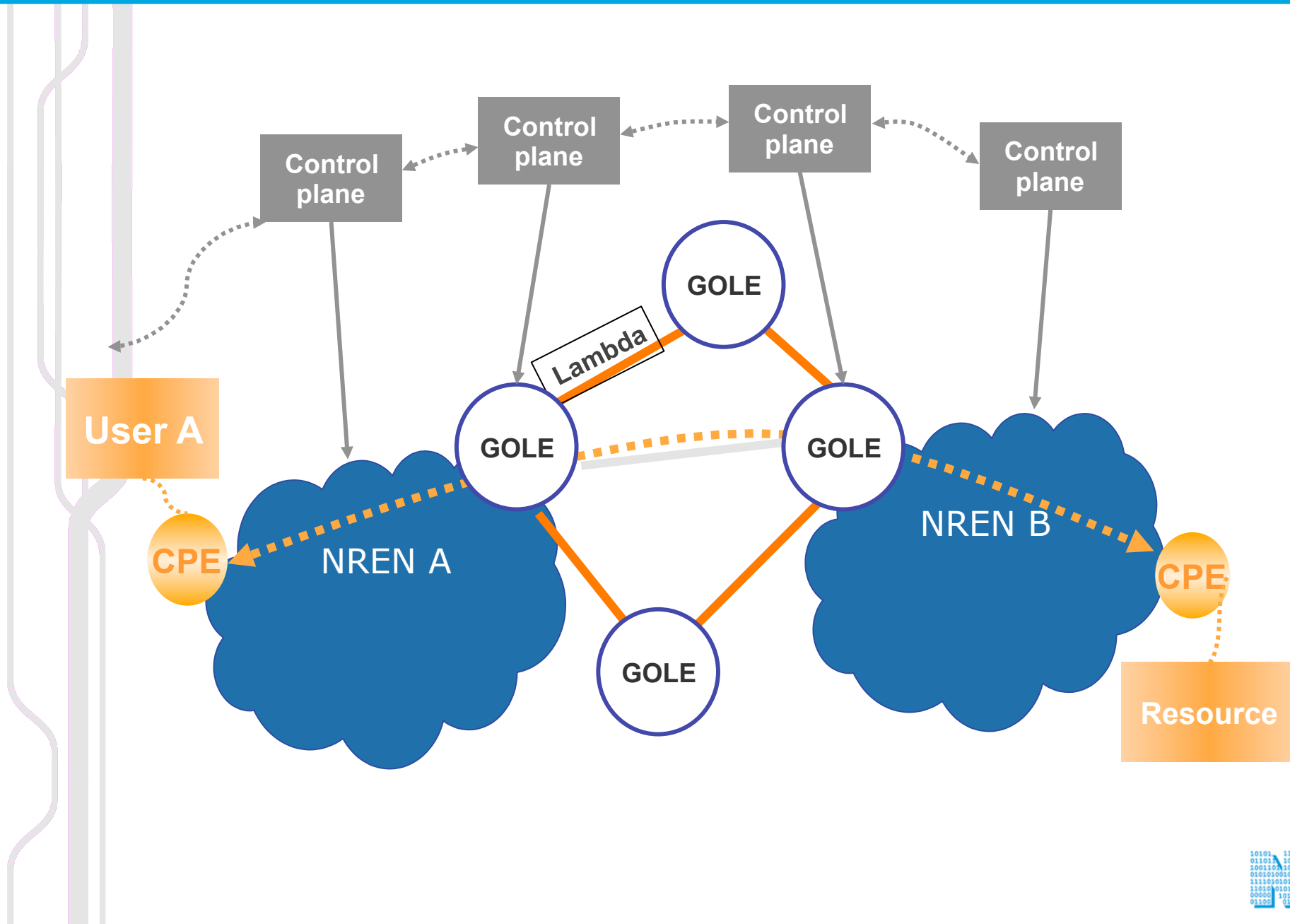
Nordic infrastructure for Research & Education

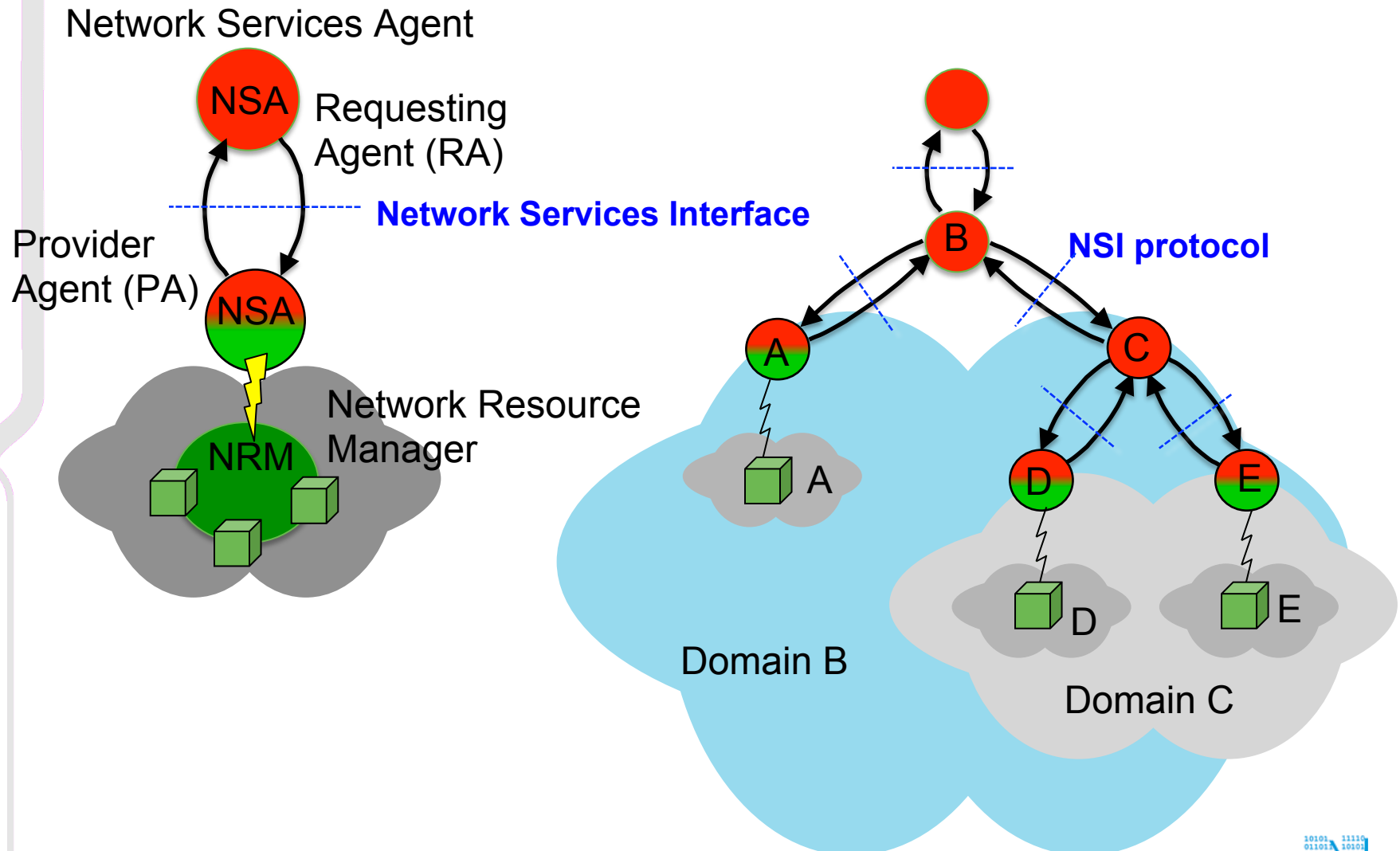
Where are we?



- Need to urgently identify LHC-related bottlenecks in general-purpose R&E networks – and provide fixes or workarounds
- Make VLAN solution operational
- Evolution of VLAN model
 - Evolve into a Routed VPN over P2P?
 - Evolve into L3 service?
 - ...
 - Many good proposals on the table
- We are dealing with the short-term issue

- NORDUnet prefer to focus on the long-term architecture for LHCONE
- According to WLCG, reasonable timeline objective for LHCONE is the 2014 LHC startup / restart
- Action
 - We need to work on the architecture
 - We need to test new paradigms and tools
 - Need for urgency, but no need to rush an implementation






- OGF NSI-CS version 1.0 is in final draft
- Demonstrations
 - Sep 2011: NSI CS Interop Plugfest – GLIF 2011 Rio de Janeiro, BR
 - Oct 2011: First NSI Transport Provisioning, Future Internet Assembly 2011 Poznan, PL
 - Nov 2011: Global NSI + AutoGOLE Demonstration Supercomputing 2011 Seattle, US

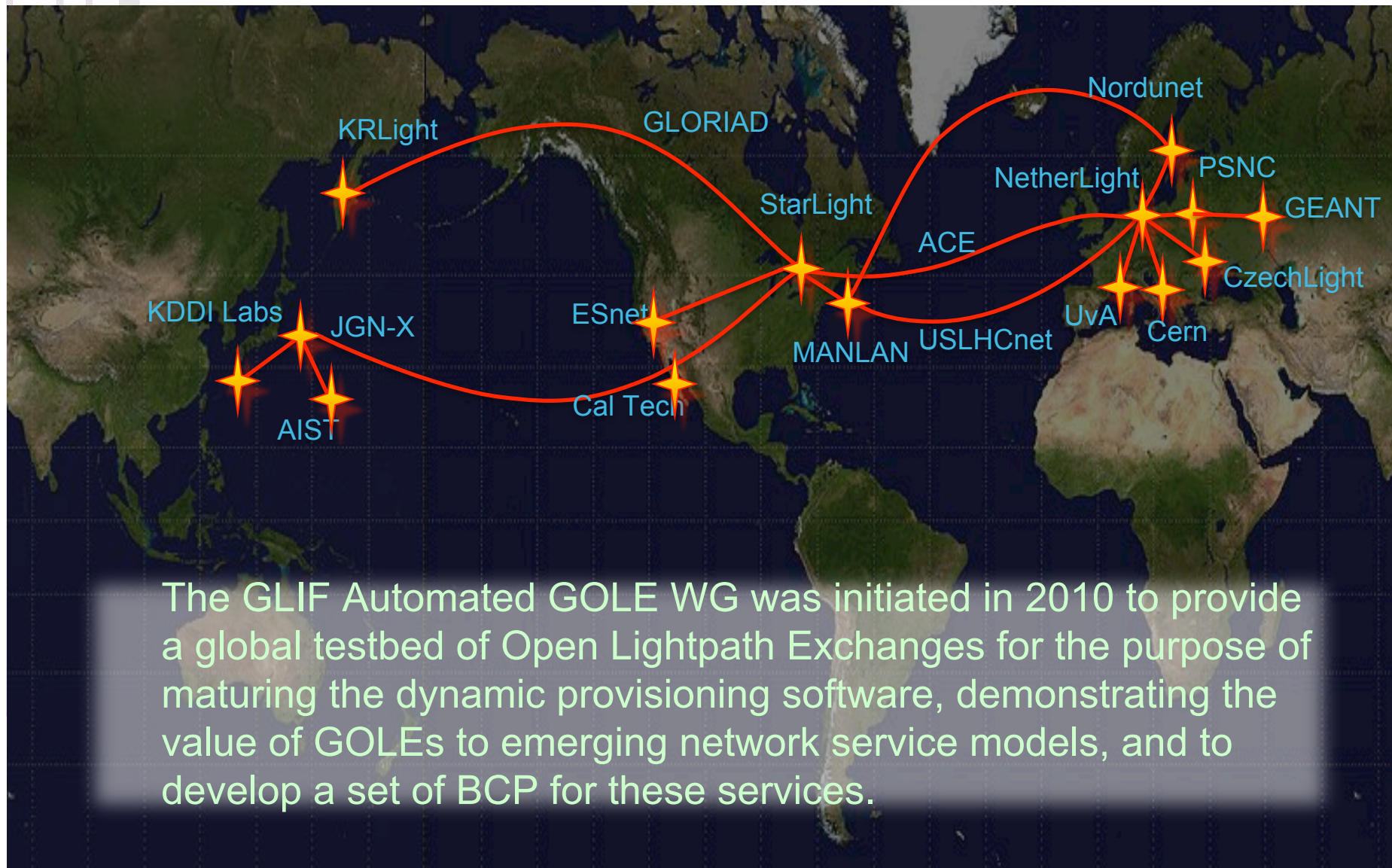


- Open
 - NSI is an open community effort
- Framework
 - It is a *Framework* for distributed network services – not simply the next signaling protocol
- Standard
 - It is now a standard (OGF), and gaining increasing support and adoption

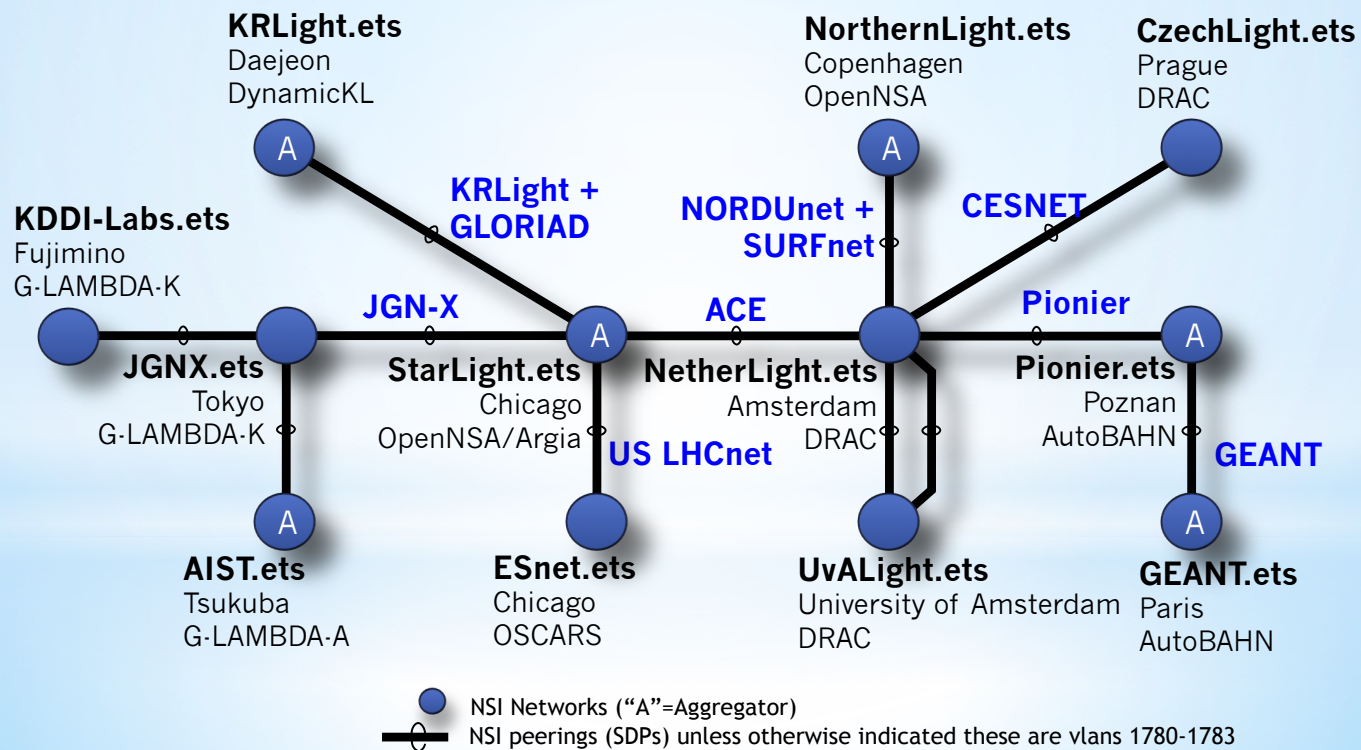
- NSI Connection Service (CS) 
 - inter-domain, scalable, and secure
- NSI Topology Exchange (DToX)
 - Dynamic distributed topology exchange. Required to automated the local maintenance of local topology and to enable scalable global pathfinding.
- NSI Performance Verification (PFVM)
 - An architecture for automated service verification and fault localization/remediation
- Common Service Definitions
 - Enabling interoperable transport services

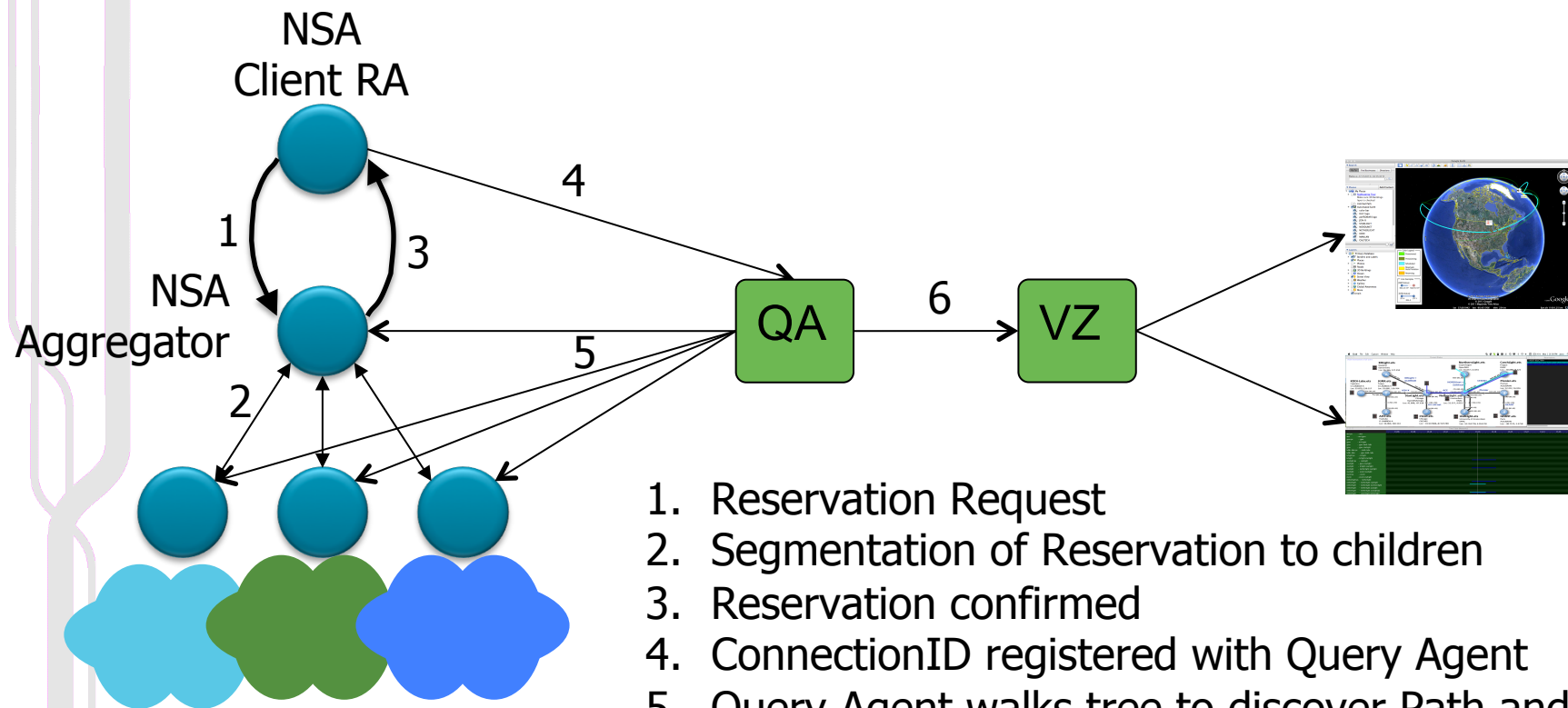
- The OGF NSI WG is an *open* working group
 - Comprehensive community participation
- You can get active
 - If you have ideas you would like to see incorporated
 - Pick the brain of an active WG member
 - Join mailing list, lurk and learn, then join the calls...
 - Contribute – ask, comment, propose...
- Highly active community, standardizing *and* developing code

- **OpenNSA** – NORDUnet
- **DRAC** – SURFnet
- **AutoBAHN** – GÉANT / PSNC
- **G-LAMBDA-A** - AIST
- **G-LAMBDA-K** – KDDI Labs
- **DynamicKL** – KISTI
- **OSCARS** – ESnet

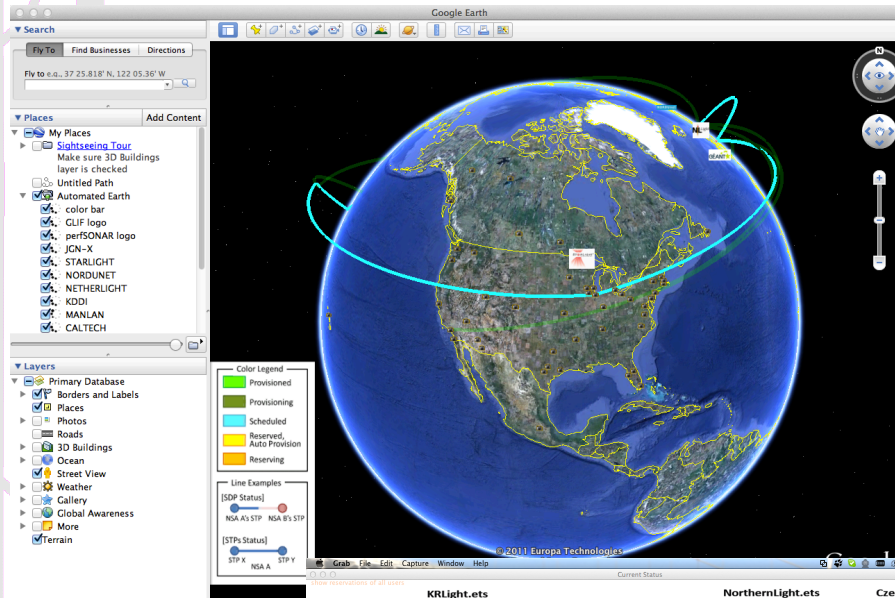


* Automated GOLE / NSI Demo Network Supercomputing 2011

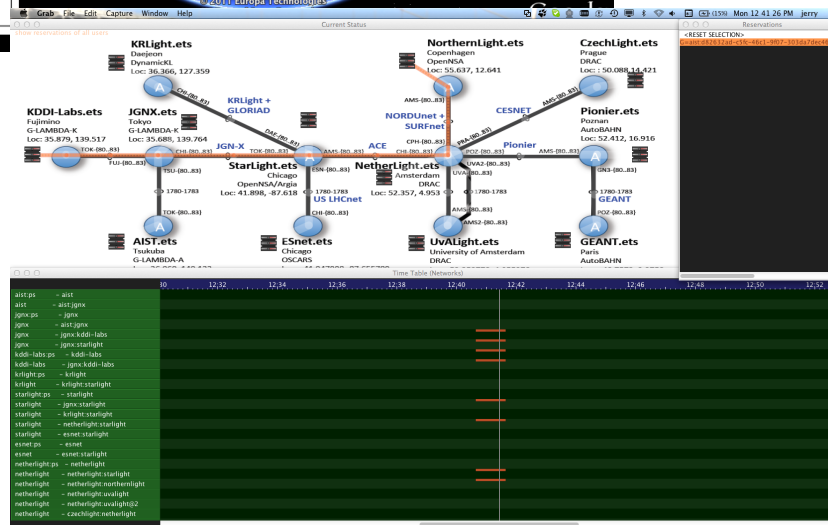




1. Reservation Request
2. Segmentation of Reservation to children
3. Reservation confirmed
4. ConnectionID registered with Query Agent
5. Query Agent walks tree to discover Path and Polls for state (10 sec interval)
6. Path and state info sent to vizualization app.
7. Viz app renders realtime image



“Automated Earth” viz
(Takatoshi Ikeda, KDDI-Labs)



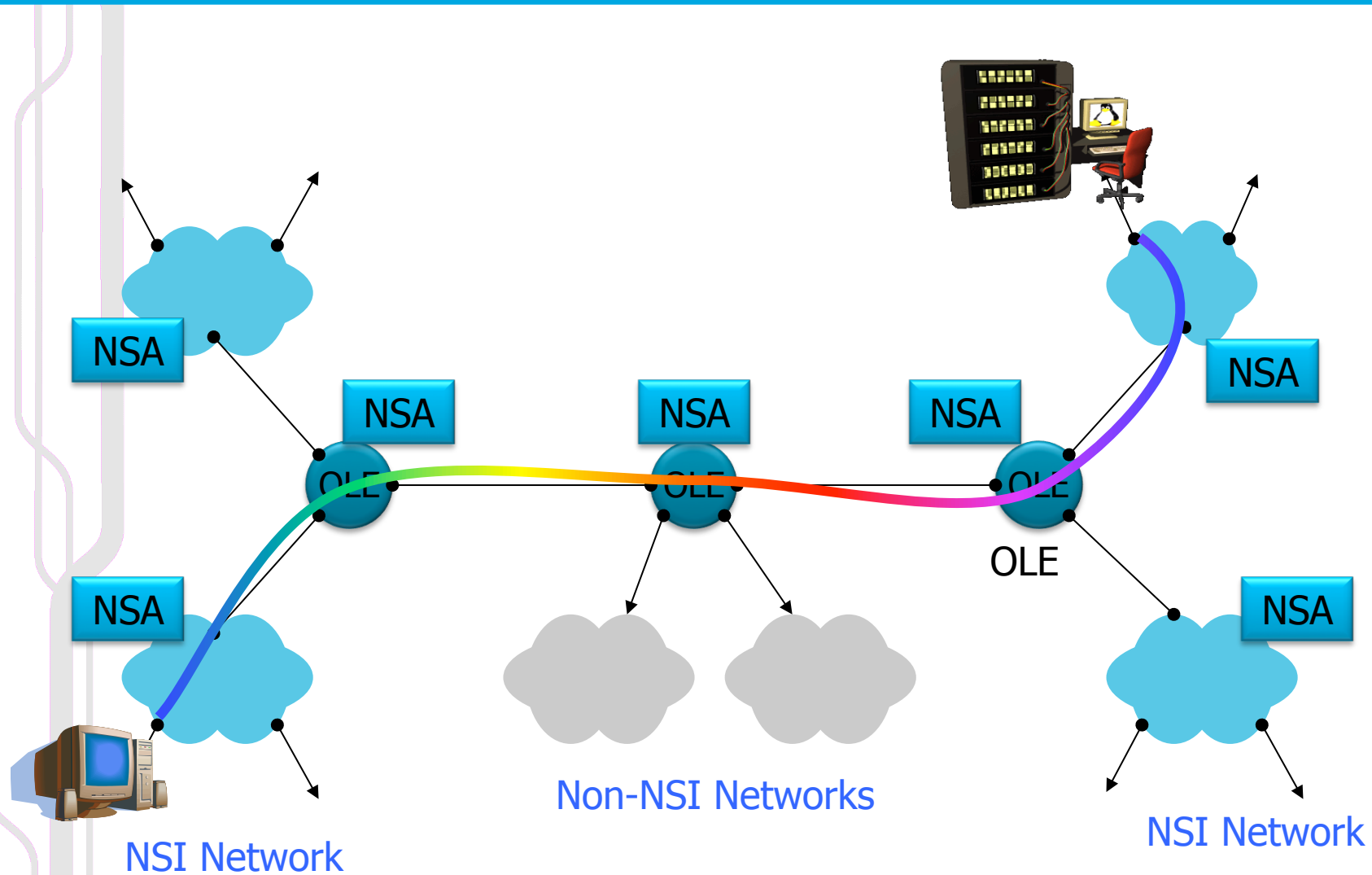
“NSI Monitor” viz
(Tomohiro Kudoh, AIST)

Key Endorsements

I once made a connection *this* long using NSI CS v1.0



- Déjà vu
 - ...but now we have the standards, an infrastructure, an engaged community, and a vision for dynamic lightpath exchanges
- Proposal
 - In parallel to the phase-1 effort...
 - Form a team representing
 - A few T1 / T2 / T3
 - A few key applications
 - Members of the Dynamic GOLE WG
 - Try it out



- Capacity
 - Dynamic GOLE testbed – sufficient for testing connectivity, but need expansion for serious data
- Getting to the sites
 - The last-mile problem
- L3 integration
 - Announcing L3 connections on internal networks or to applications when dynamic lightpaths are provisioned
- Getting to the applications
 - Software stack
 - Do applications (and their users) want to know about networking?

Any takers?

NSI + Dynamic OLE + LHCONE group

Now open for membership

Limited time exclusive offer